REMARKS

The amendment herein is to independent claims 1, 12, 22, 32, and 46. Claims 1-48 remain pending in the present application. The Examiner has made the following rejections. Claim 12 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Eguchi et al. and Wreede et al., respectively. Claim 22 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Ikeda et al. Claims 1, 10, 13, and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Margerum et al. in view of either Eguchi et al., Wreede et al., or Ikeda et al. Claims 1-10 and 12-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sutherland et al., in view of Margerum et al. combined with either Eguchi et al., Wreede et al., or Ikeda et al. Claims 32-35 and 37-40 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sturdevant, in view of Redfield, Hall et al., and Amako et al. Claims 1, 2, 9-11, 22-24, 32-43 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sturdevant, in view of Redfield, Hall et al., and Amako et al. and Sutherland et al. (Chem. Mater.). Claims 1-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sutherland et al., in view of Margerum et al. combined with either Eguchi et al., Wreede et al., or Ikeda et al. and further in view of Hall et al. and Amako et al. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gambogi et al. in view of Hall et al., Kato et al., Sutherland et al. and Ikeda et al.

The Examiner has objected to claims 44 and 45 and indicated the allowability of claim 47. The Applicant thanks the Examiner for this indication of allowable subject matter.

In view of the amendments to the independent claims as well as the remarks herein, the Applicant hereby requests reconsideration of the Examiner's rejections.

Each of the independent claims 1, 12, 22, 32, 46, 47, and 48 refer to at least one hologram which is to be duplicated. The hologram that is duplicated is referred to for discussion purposes below as the master hologram. Either as amended, or as originally presented, each of the independent claims requires that the diffraction efficiency of the master hologram be variable as opposed to static. Simply stated, none of the references cited by the Examiner discuss a method or system for duplicating or replicating a master hologram, wherein the master hologram has a variable diffraction efficiency. In fact, the only reference cited by the Examiner that even discloses a hologram having variable diffraction efficiency, other than the Applicant's own art, is Margerum et al. **Margerum et al. is directed to a method for making a hologram having variable diffraction efficiency, not to a method for duplicating a master hologram having variable diffraction efficiency.** Further, in the references cited by the Examiner that are drawn to the copying of master holograms, the master holograms are **always** static. There is no suggestion in any of the cited references to use a master hologram having variable diffraction efficiency and, thus, no motivation can be provided by any of the references for replacing the **static master holograms** with master holograms having variable diffraction efficiencies. The use of a variable diffraction efficiency master hologram provides the basis for the ability to control printing methods in situations where less than optimum diffraction efficiency in the master hologram is desired during some step of the printing process. **This is not possible with static master holograms.**

Independent claim 48 has not been amended since the language of the claims currently requires that the master holograms have variable diffraction efficiencies since they are required by the language of the claims to be switched ON (first, second, and third master hologram) and OFF (first and second hologram). Further, claim 48 includes the limitations found to be

allowable in claims 44, 45, and 47 by the Examiner as stated in paragraph 13. Specifically, claim 48 includes for all intents and purposes, "the switching of plural master holograms and the holographic recording layers to selectively allow recording in a second holographic recording layer of information from a second master in contact with the first master and the first holographic recording medium after recording a first hologram in a first holographic layer,... ."

Consequently, since none of the cited references disclose a master hologram having a variable diffraction efficiency, claims 1-48 of the present application are patentable over the cited references as none of the references, either singly or in combination, anticipates or renders unpatentable the claimed subject matter.

CONCLUSION

Applicants respectfully submit that this application is in condition for allowance, and such disposition is earnestly solicited. If the Examiner believes that the prosecution might be advanced by discussing the application with Applicants' representatives, in person or over the telephone, we welcome the opportunity to do so.

Attached hereto is a marked-up version of the changes made to the specification by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. A system for duplicating a hologram comprising:

a radiation source for emitting a coherent beam of radiation;

a hologram having variable diffraction efficiency; and

a recording substrate comprised of a polymer-dispersed liquid crystal material for recording a replica of the hologram therein, wherein the hologram and the recording substrate are in optical contact with one another and are placed in a path of the coherent beam of radiation.

12. A method for duplicating a hologram comprising:

directing a coherent incident radiation beam at a first optical component;

transmitting the coherent incident radiation beam through the first optical component forming a transmitted beam, to a second optical component having a hologram with variable diffraction efficiency recorded therein; and

diffracting the transmitted beam via the hologram forming a diffracted radiation beam, wherein the coherent incident radiation beam and the diffracted beam interfere within the first optical component to form a replica of the hologram therein.

22. A method for duplicating a hologram comprising:

directing a coherent radiation beam at a first optical component having a hologram with variable diffraction efficiency recorded therein;

diffracting a first portion of the coherent radiation beam via the hologram forming a diffracted radiation beam;

transmitting a second portion of the coherent radiation beam through the first optical component forming a transmitted beam; and

interfering the diffracted radiation beam with the transmitted radiation beam within a second optical component to form a replica of the hologram therein.

32. A method for contact recording at least one hologram comprising:

arranging at least a first master hologram having variable diffraction efficiency and at least a first holographic blank in optical contact to form a master/blank assembly;

exposing the master/blank assembly to a pre-recording beam; and

exposing the master/blank assembly to a recording beam, wherein the master/blank assembly remains optically contacted throughout each exposure.

46. A method for contact recording at least one hologram comprising:

arranging at least a first master hologram having variable diffraction efficiency and at least first holographic blank in optical contact to form a master/blank assembly;

exposing the master/blank assembly to a recording beam; and

exposing the master/blank assembly to a post-recording beam, wherein the master/blank assembly remains optically contacted throughout each exposure.